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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,456	02/25/2004	Christian Krueger	2000.109900	4909
23720	7590	06/15/2005	EXAMINER	
WILLIAMS, MORGAN & AMERSON, P.C. 10333 RICHMOND, SUITE 1100 HOUSTON, TX 77042			JOHNSTON, PHILLIP A	
			ART UNIT	PAPER NUMBER
			2881	

DATE MAILED: 06/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/786,456

Applicant(s)

KRUEGER, CHRISTIAN

Examiner

Phillip A. Johnston

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7-15-2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

***Detailed Action***

***Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-38 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 6,852,984. Although the conflicting claims are not identical, they are not patentably distinct from each other because it is obvious to one of ordinary skill in the art that all the limitations in Claims 1-38 of Application No. 10786456 are contained in Claims 1-19 of U.S. Patent No. 6,852,984. By way of example, a comparison of Claims 1 and 13 of Application No. 10786456, with Claims 1,9,15, and 16 of U.S. Patent No. 6,852,984 is included below.

Claim 1 of Application No.10786456 reads as follows;

1. An ion beam detector, comprising: a Faraday cup body having a bottom portion, sidewalls and an entrance aperture opposite to said bottom portion; a first conductive region formed on said Faraday cup body and having a first detection

surface oriented along a first direction; and a second conductive region formed on said Faraday cup body, electrically insulated from said first conductive region and having a second detection surface oriented along a second direction that is different from said first direction.

Claim 13 of Application No. 10786456 reads as follows;

13. A method of controlling characteristics of an ion beam, the method comprising: obtaining subsequent sets of measurement readings from a plurality of Faraday cups, each Faraday cup being arranged relative to said ion beam so as to receive a portion of said ion beam, each set of measurement readings gathered within a specified time interval; and adjusting at least one tool parameter related to said beam characteristics on the basis of said subsequent sets of measurement readings.

Claim 1 of U.S. Patent No. 6,852,984 reads as follows;

1. A Faraday system, comprising: a body having an entrance surface exposable to an ion beam and a depth; a plurality of openings formed in said entrance surface and extending along said depth; and at least one conductive detection region disposed adjacent to said body so that at least a portion of said conductive detection region is aligned with at least one of said openings to receive ions through said at least one opening.

Claim 9 of U.S. Patent No. 6,852,984 reads as follows;

9. The Faraday system of claim 1, wherein said detection region comprises plural conductive detection sub-regions that are electrically insulated from each other,

each of said sub-regions disposed adjacent one or more dedicated openings to receive an ion beam portion through said one or more dedicated openings.

Claim 15 of U.S. Patent No. 6,852,984 reads as follows;

15. A Faraday system, comprising: a traveling Faraday cup designed to allow ion beam profile measurements; and a Faraday assembly attached to said traveling Faraday cup, said Faraday assembly including: a body having an entrance surface and a plurality of openings formed in said entrance surface and extending through said body, and one or more conductive detection regions associated with one or more of said openings to receive ion beam portions through said openings.

Claim 16 of U.S. Patent No. 6,852,984 reads as follows;

16. A method of controlling an ion beam, the method comprising: exposing at least one detection surface to an ion beam through a plurality of longitudinal openings that are substantially devoid of an electric field; and adjusting at least one of beam parallelism and beam divergence on the basis of a measurement reading from said at least one detection surface.

It is obvious to one of ordinary skill in the art that all the limitations in Claims 1-38 of Application No. 10786456 are for the most part, contained in Claims 1-19 of U.S. Patent No. 6,852,984.

### ***Claims Rejection - 35 U.S. C. 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-12, and 26-34 are rejected under 35 U.S.C. 102 (b) as being clearly anticipated by Turner, U.S. Patent No. 5,903,002.

Turner (002) discloses a Faraday cup design including a bottom 12, walls 6, aperture 4, and plural aperture plates 7-9; where the conductive collector surfaces; e.g., inner cup frame 3, substrate 12 and aperture plates 7-9, are insulated from each other and have different orientations to the ion beam, as recited in claims 1-12, and 26-34. See Column 4, line 23-52; Figures 1 and 2 below.

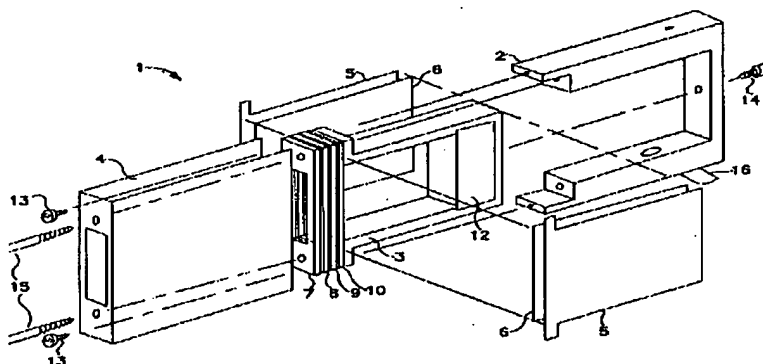


FIG. 1

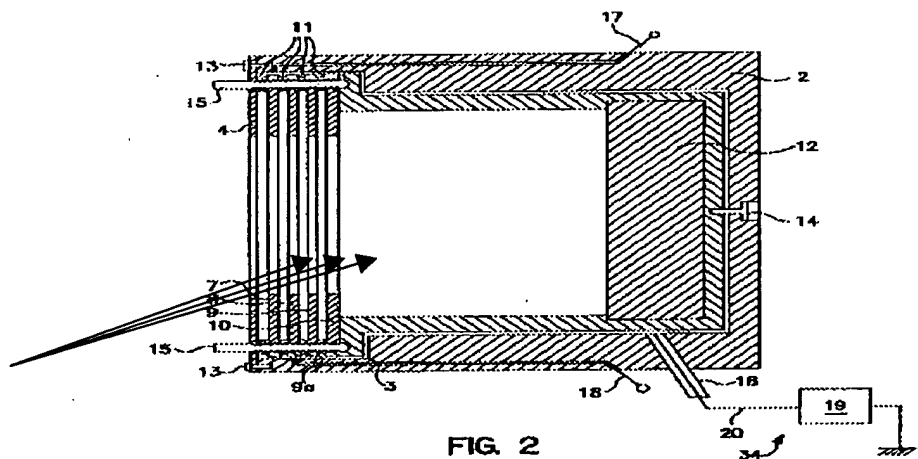


FIG. 2

Turner (002) also discloses the use of v-sectioned grooved surfaces in a Faraday cup, as recited in claims 10-12. See Column 1, line 59-67.

In addition, it is implied in Figure 2 above that, aperture plates 7-10, are each conductive regions positioned at different angles (see arrows) relative to a single point on the longitudinal axis, as recited in claims 10-12.

***Claims Rejection – 35 U.S.C. 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 13-25 and 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,614,027 to Iwasawa, in view of Rathmell, U.S. Patent No. 4,816,693.

Iwasawa (027) discloses an ion implantation apparatus; wherein the beam width is measured using a plurality of faraday cups 40 and 46 positioned to collect ion current across the beam and generate a beam width waveform shown in Figure 3 below. Thereafter beam controller 54 is used to control divergence of the beam, as recited in claims 13-25. See Column 3, line 16-39; Column 5, line 41-50; Column 6, line 51-67; Figures 1 and 3 below.

FIG. 1

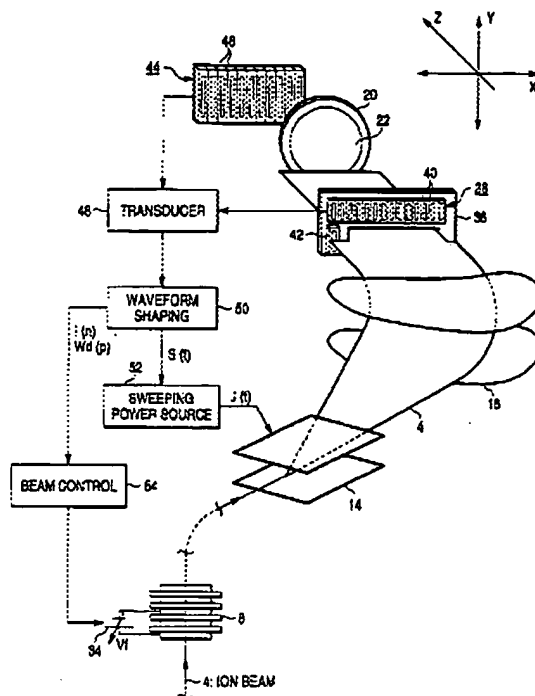
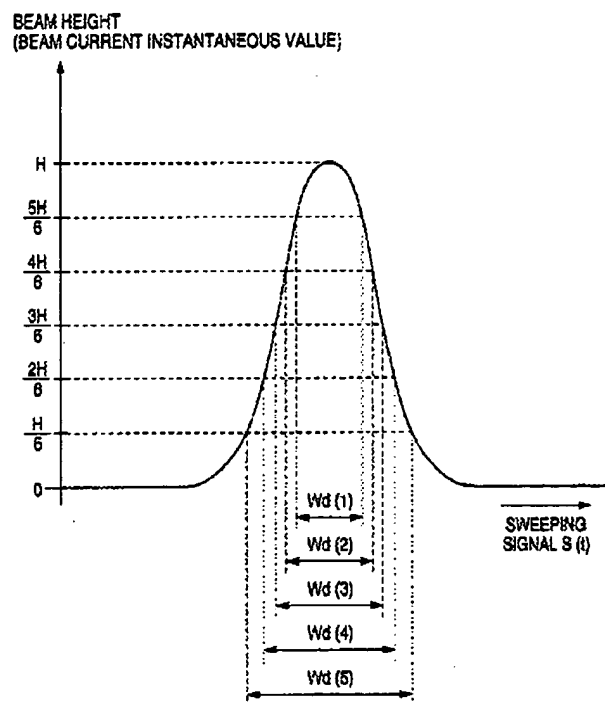


FIG. 3

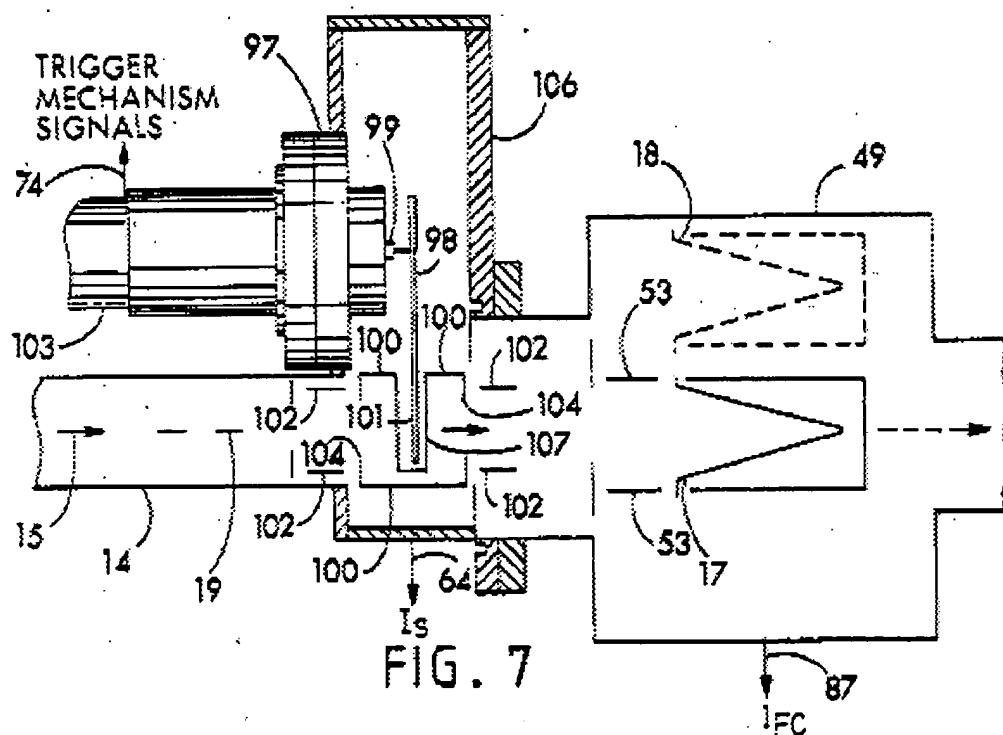




Iwasawa (027) as applied above fails to teach the use of angled conductive surfaces and adjusting energy and dopant ions, as recited in claims 21, and 35-38. However, Rathmell (693) discloses;

(a) The use of energy analysis magnet 12 for selectively acquiring an ion with specific energy from the ion beam 4, as recited in claim 21. See Column 3, line 23-34.

(b) The Faraday cup 17 or 18 is preferably of the tantalum cone design. The steep cone shape spreads the beam power over the sides of the cone, which decreases the effective power density on the tantalum surface, thereby eliminating local hot spots, as recited in claims 35-38. See Column 7, line 16-59; and Figure 7 below.



Therefore it would have been obvious to one of ordinary skill in the art that the ion implant control apparatus and method of Iwasawa (027) can be modified to use the Faraday cup of Rathmell (693), to provide a deep tantalum cone design combined with the electron suppression to thereby provide accurate beam current measurements.

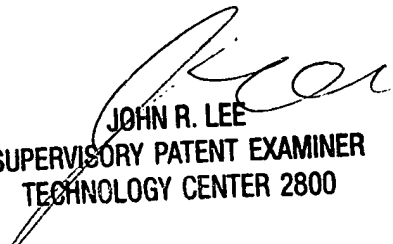
**Conclusion**

7. Any inquiry concerning this communication or earlier communications should be directed to Phillip Johnston whose telephone number is (571) 272-2475. The examiner can normally be reached on Monday-Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiners supervisor John Lee can be reached at (571) 272-2477. The fax phone number for the organization where the application or proceeding is assigned is 703 872 9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PJ

June 8, 2005

  
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